Nuclear Decommissioning Authority

Strategic Technical Baselines for UK Nuclear Clean-up Programmes

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Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
SEP 2008		**00-00-2008 to 00-00-2008**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Strategic Technical Baselines for UK Nuclear Clean-up Programmes	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Nuclear Decommissioning Authority,Herdus House Moor Row,Westlakes Science & Technology Park,Cumbria RG17 7DB,**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES
See also ADM002183. Presented at the Technology Maturity Conference held in Virginia Beach, Virginia on 9-12 September 2008. U.S. Government or Federal Rights License.

14. ABSTRACT

15. SUBJECT TERMS

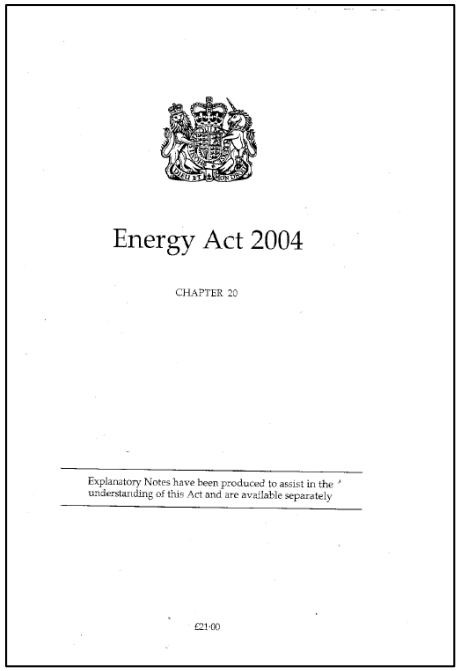
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**14**	

Outline

- Background to NDA and our responsibilities
- Context of issues and challenges
- NDA approach to Technical Underpinning
  - Technical Baselines
  - Technology Readiness Levels
  - R&D needs, risks, opportunities
- Progress to date and way forward

Background

- NDA established by Government in April 2005 to:
  - Safely clean up the UK civil public sector nuclear legacy with due regard to the environment and socio-economic issues
  - Ensure that current commercial operations are run safely and efficiently on behalf of UK taxpayer



Energy Act 2004

CHAPTER 20

Explanatory Notes have been produced to assist in the understanding of this Act and are available separately

£21·00

Statutory Duties – Energy Act 2004

- Ensure legacy is dealt with safely, securely and cost effectively in ways that protect the environment
- Promote competition in the decommissioning and clean up market
- Carry out Research & Development related to decommissioning
- Ensure maintenance & development of decommissioning skills
- Promote good practice and secure value for money
- Promote and encourage innovation

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Context

Diversity of challenge

An aerial view of the Dounreay site as it was in the late 1970s.

Sellafield, Cumbria

Lifetime plans

Challenge:

- Meet the obligations in the Energy Act
- Provide structured approach for investment in “R&D” to ensure technical solutions are the most appropriate
- Consistent method for measuring performance of contractors

• OUR APPROACH....

Issues - complexity

Our Approach

- Technical Baseline and Underpinning Research and Development Documents (TBURD)
- Underpin the short, medium and long-term activities and highlight any gaps
- Based on Technology Readiness Levels (TRLs) as compiled by our SLCs; site to site and not project to project
- Builds on existing good practice but NDA approach more site specific

Technology Readiness Levels

9	Actual System Proven through technology application
8	
7	System prototype demonstration in an operational environment
6	
5	Component and/or bench validation in relevant environment
4	
3	Analytical and experimental critical functions - characteristic proof of concept
2	
1	Basic principles observed and reported

Link to R&D requirements

- Systematic approach that provides an intrinsic link to underpinning R&D
- Decision and insertion points time-driven with visibility
- Highlight and grade the gaps
  - Needs — required to underpin solutions
  - Risks — required to reduce key risks
  - Opportunities — innovations to the baseline
- Possible change to R&D similar to how TRL is measured and assessed for tracking progress

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Progress to date

- Third cycle of TBURD production completed
- Consistent format – effective working
- Challenging budgets – challenging baseline technology
- Seeing common technical issues e.g. waste issues, materials characterisation
- Key decision points milestones
- Technology transfer interfaces SLC sites talking to other sites and exchanging/collaborating

Benefits to date

- Systematic process for underpinning - operational & decommissioning activities
- Consistent approach across all sites - common language across diverse situations
- Baselines are more robustly technically defined and risk and opportunities are visible
- Structured approach to technology investment to deliver what is needed and when
- Baseline for innovation and reward for success
- Method for sharing success

Way forward

- Need to look at applying Critical Technology Enablers
- Benchmarking against others to measure success and methods of operation i.e how do others do it
- Quantitative measuring of benefits realised by working/sharing with others in USA and worldwide
- Reward innovation through technical baseline - right commercial framework

WORLD CLASS

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